A NEW SPECIES OF *ANTHERAEA* HÜBNER (LEPIDOPTERA: SATURNIIDAE) FROM EAST TIMOR

M.D. LANE[1], S. NAUMANN[2] and D.A. LANE[3]

[1]*2 Biwa Close, St Clair, NSW 2759*

[2]*Potsdamer Strasse 71, 10785 Berlin, Germany*

[3]*3 Janda Street, Atherton, Qld 4883*

Abstract

Antheraea lorosae sp. n. is described and figured from East Timor and compared with closely related species from the Sunda Shelf of Indonesia: *A. raffrayi* Bouvier from Bali and Java, *A. ranakaensis* Paukstadt *et al.* from Flores, *A. sumbawaensis* Brechlin from Sumbawa and a population of an (as yet) undescribed species from Alor. Male genitalia of these closely related species, all in the *frithi* subgroup of the *mylitta/frithi* group (a complex around *A. platessa* Rothschild), are figured for comparision.

Introduction

Very little is known about the Saturniidae of Timor. Rothschild (1895) first described *Attacus dohertyi* Rothschild from that island and a further 100 years elapsed before additional species were recorded. Late last century, representatives of the genera *Cricula* Walker, *Actias* Leach and *Samia* Hübner were recorded, although these new species were described from the nearby island of Flores. To date, no representatives of the genus *Antheraea* Hübner were known from Timor, until one of us (MDL) collected two male specimens in East Timor while engaged on a UN mission in 2002. A further eleven males and a single female were collected in January 2004, following a visit by two of us (DAL and MDL). After comparison with related species, noticeable pattern differences, coupled with its unique genitalic structures, led us to have no hesitation in describing this species as new.

Antheraea lorosae sp. n.

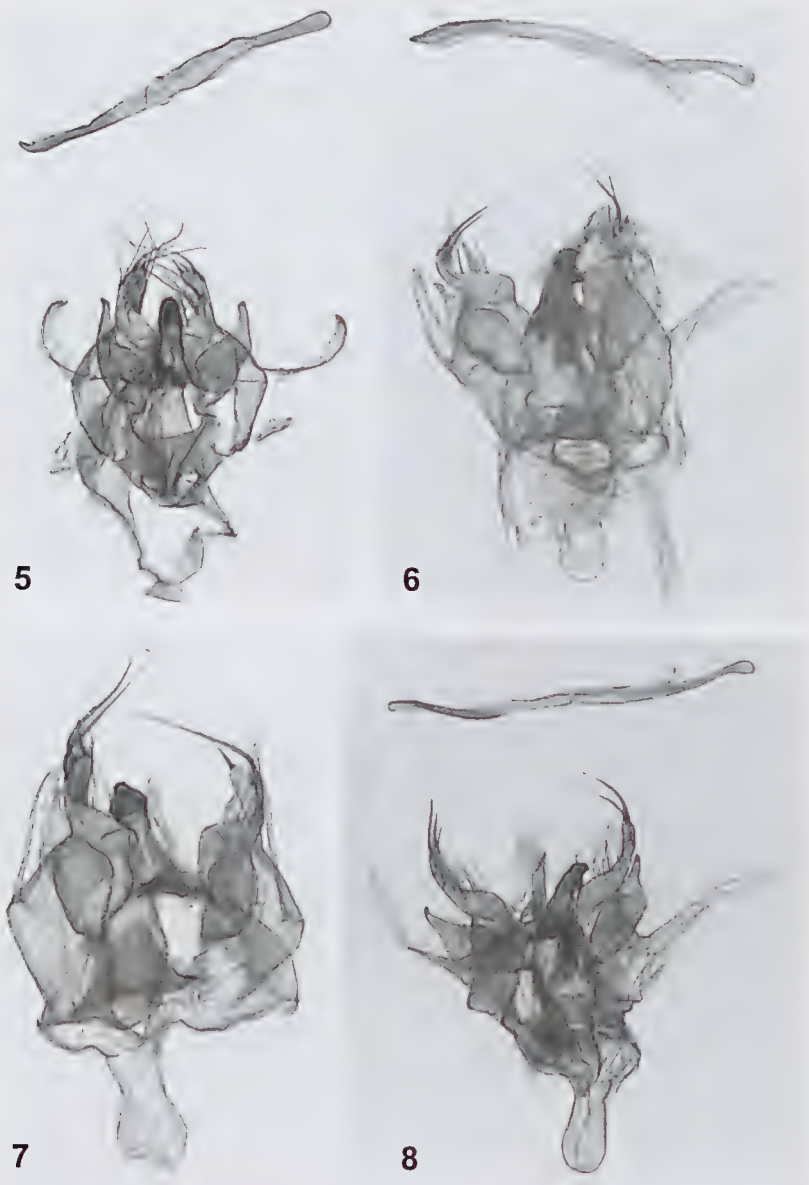
(Figs 1-5)

Types. Holotype ♂, EAST TIMOR: Bobanaro, 9°00'40"S, 125°21'49"E, 970 m, 24.x.2002, M.D. Lane, genitalia no. 913/03 Naumann, ex coll. D.A. Lane (in Australian National Insect Collection, Canberra). *Paratypes*: 1 ♀, 8 ♂♂, same data as holotype, but 16, 17, 18, 20.i.2004, D.A. & M.D. Lane (in coll. D.A. Lane, Atherton); 1 ♂, same data as holotype, but 26.x.2002, M.D. Lane, genitalia no. 867/03 Naumann, 3 ♂♂, same data as holotype, but 17, 21.i.2004, D.A. & M.D. Lane (in coll. Stefan Naumann, Berlin).

Description. Male (Figs 1-2). Forewing length (centre of thorax to apex) 69-75 mm. Antenna ochreous brown, 9.5 mm long; longest rami 2.7 mm, quadripectinate; apical 1.8 mm with very short rami, bipectinate. Head brown, collum greyish. Ground colour of wings, thorax and abdomen ochreous brown. Forewing with costa straight for basal three quarters, then sharply bowed to apex; apex quite sharply falcate; termen strongly convex below apex, nearly straight towards tornus; tornus rounded; dorsum straight. Dorsum and lower termen approximately square.

Figs 1-2. *Antheraea lorosae* sp. n., holotype male. (1) upperside; (2) underside.

Figs 3-4. *Antheraea lorosae* sp. n., paratype female. (3) upperside; (4) underside.



Figs 5-8. *Antheraea* species, male genitalia. (5) *A. lorosae* paratype, genitalia no. 867/03 Naumann; (6) *A. ranakaensis* paratype, genitalia no. 868/03 Naumann; (7) *Antheraea* sp. from Alor I., genitalia no. CBH-0364; (8) *A. schroederi* paratype, genitalia no. 870/03 Naumann.

Hindwing with termen rounded, tornus bowed, dorsum straight. Forewing with proximal two thirds of costa grey, apical part in ground colour. Antemedian and median areas of forewing in ground colour, an antemedian band barely visible, anterior to the eyespot slightly lighter. Forewing eyespot almost round, 4.5 mm in maximum diameter, very faint indication of hyaline centre, basally pink and white, posterior bordered dark grey, internal part in ground colour. Anterior to the postmedian line there is a greyish shadow of a zigzag line, strongly indented along veins, followed by a zone of approximately 3 mm width in ground colour. Postmedian band with upper half nearly straight, purplish grey, lower half indented along veins. Postmedian area slightly darker than ground colour, suffused with dark greyish scales, apical area light grey. Hindwing of same colour and pattern, eyespot almost round, 5.5 mm in maximum diameter, with a small hyaline centre of about 1 mm in size; wing pattern similar to forewing. Underside lighter ochreous ground colour, the forewing basally uniform to a more intensely coloured band through the eyespot which lacks the darker outer part of the upperside, followed by a greyish postmedian area and a dark ochreous marginal area. Apically on the costal margin there is a black patch. Hindwing underside with antemedian and postmedian area greyish; median band through eyespot ochreous, outer whitish and dark grey of the upper eyespot missing. Marginal area again darker ochreous, separated from the postmedian area by a row of additional dark violet brown marginal patches, one each between the veins.

Male genitalia (Fig. 5). As already mentioned in many descriptions of *Antheraea* species, the differences in male genitalia between different species within the so-called *mylitta/frithi* group are minor. Therefore, it was surprising to find one structure in the genitalia of *A. lorosae* which is unique for the whole genus and possibly is an indication of long isolation and/or very early separation of this species. In the ventral part of the valvae, emerging directly from the sacculus, is a small, third distinctive process of ear-like form, covered with small hairs. This ear-like process is unique in the genus *Antheraea*. The central process is similar to that in *A. ranakaensis* Paukstadt, Paukstadt & Suhardjono (Fig. 6), as well as in an undescribed species from Alor Island (Fig. 7). The dorsal process also is similar, but bears a different, mostly dorsal bristle. In *A. lorosae* the dorsal process is intermediate between the very short one of *A. ranakaensis* and the longer one in specimens from Alor. The labides, internal processes of the valvae, are longer and broader than the more slender ones of *A. ranakaensis* and of the Alor specimens. The uncus in all three populations is similar, while the juxta of *A. lorosae* is somewhat rounded but has lateral processes in both *A. ranakaensis* and the Alor population. The aedeagus in all three is of similar length but has a typical small hook at the distal end in *A. lorosae*.

Female (Figs 3-4). Forewing length 83 mm. Antenna light brown, 13 mm long, narrowly pectinate. Head light brown, collum light grey. Ground colour

of wings, thorax and abdomen light brown. Wing shape as in male, though wings much broader; forewing apex broad and not falcate; termen slightly concave; tornus and dorsum as in male. Hindwing as in male though more rounded. Forewing markings as in male but hyaline eyespot much larger, slightly elliptical (8 mm x 7 mm), concentrically ringed by a reddish brown band 2 mm wide, then edged basally by a thin pinkish line and circled by a narrow dark brown line (more prominent apically). Hindwing markings as in male; hyaline eyespot much larger, slightly elliptical, similar though slightly smaller to that of the forewing, inner concentric reddish brown band broader and more distinctly reddish basally. Underside eyespot concentric rings reduced in width, deeper reddish brown in colour.

Etymology. This new species is named after a proposal by its first collector, M.D. Lane: Lorosae = East. The local Tetun name for the people's homeland is Timor Lorosae, a name that dates back many centuries.

Distribution. To date, *A. lorosae* is known only from Bobanaro in East Timor. It is the most south-easterly known species in the genus *Antheraea*.

Comments. The *A. platessa* complex includes several interesting species which are superficially similar in appearance, but to varying degrees exhibit differing wing shapes and markings. When separating species in the *A. platessa* complex, key factors are genitalia differences, wing patterns and the form and pattern of fore and hindwing eyespots. *A. lorosae* has small eyespots with only a very faint indication of a hyaline centre in the forewing and small hyaline centre in the hindwing. *A. platessa* Rothschild has almost no hyaline centre on either wing, except for a few mainland specimens which show faint forewing hyaline centres, *A. raffrayi* Bouvier has no hyaline centres (c.f. Bouvier 1928), *A. sumbawaensis* Brechlin has small hyaline centres on both fore and hindwings, *A. ranakaensis* has larger hyaline parts also on both fore and hindwings, the specimens from Alor have nearly no hyaline parts, while *A. schroederi* Paukstadt, Brosch & Paukstadt always has large hyaline parts on both fore and hindwings.

Further stable differences between those species comprise the size of the fore and hindwing eyespots (quite small for *A. lorosae*, also for *A. platessa*, *A. raffrayi* and Alor specimens), the form of the forewing apex (slender in *A. lorosae*, as in *A. raffrayi* and Alor specimens) and the colour on average (lightest in *A. lorosae*, more olive in *A. ranakaensis* and Alor specimens, more chocolate in *A. raffrayi*, more colourful in *A. platessa* and *A. schroederi*).

Very few females of any of the closely related species are known. The single paratype female of *A. lorosae* differs from the female of *A. ranakaensis* in several noticeable features - the ground colour of *A. ranakaensis* is ochre; the forewing eyespot concentric rings on both upper and underside of *A. lorosae* are narrower than those of *A. ranakaensis*; the faint antemedian upperside

band of both fore and hindwing of *A. lorosae* is nearly tangential terminally to the eyespot, as opposed to nearly bisecting the eyespot in *A. ranakaensis*. Separation of the forewing postmedian line and eyespot is much greater in *A. lorosae* than in *A. ranakaensis*. On the underside the eyespots of *A. lorosae* are more nearly circular in shape; the antemedian band is more heavily marked and also more nearly tangential terminally to the eyespots. The forewing postmedian band in *A. lorosae* is absent on the underside and the hindwing postmedian band is present in the tornal area only. The female of *A. sumbawaensis* is presently unknown.

In wing shape, *A. lorosae* is closest to *A. ranakaensis*; however wing markings (upper and underside) are closest to *A. sumbawaensis*, placing *A. lorosae* intermediate between these species.

Nothing is known so far about the preimaginal instars of the East Timorese species.

Discussion

Much of the landscape of East Timor is heavily deforested, having been subjected to hundreds of years of clearing by its local inhabitants (c.f. Monk *et al.* 1997). With wood products being used in everyday living, coupled with agricultural practices, remnant patches of rainforest are mostly found on steep, largely inaccessible slopes of higher mountain ranges. Lower lying areas are subject to high temperatures and humidity for most of the year and remaining vegetation patterns in lower sections are mostly open scrubland with some eucalypt areas. Most of the rainforest areas occur above 700 metres elevation, often in fragmented patches along gullies and steep ridges. Large concentrations of fragmented rainforest are found within the districts of Balibo and Bobanaro. Several other species of Saturniidae were collected in both of these areas, including *Attacus dohertyi*, *Actias groenendaeli* Roepke, *Cricula hayatiae* Paukstadt & Suhurdjono and *Samia yayukae* Paukstadt, Peigler & Paukstadt (see also Peigler and Naumann 2003). The *A. lorosae* males mostly came to light after 10 pm (local time) on nights of heavy fog which followed storm rains. Further collecting efforts are expected to show that the species also occurs in West Timor, which is a part of Indonesia. Interestingly, known *Antheraea* specimens from Alor and Flores represent different species.

During the last 10 years a lot of knowledge about the insular species of *Antheraea* from the Indonesian and Philippine Archipelagos has accumulated. This has led to descriptions of several new species - *A. ranakaensis* from Flores, *A. sumbawaensis* from Sumbawa and *A. schroederi* from the Philippines. This recent knowledge about Indonesian populations has confirmed that different species occur on the different groups of the Larger and Lesser Sunda Islands and also the specific status of *A. raffrayi* on Java and Bali. For comparision with *A. lorosae* we mainly used material figured in

the original descriptions, as well as material from the collections of U. Brosch and S. Naumann, including genitalia preparations resulting from those specimens. Apart from mainland Asian specimens, the following were dissected:

A. sumbawaensis: genitalia no. 331/98 Naumann (figured in Brechlin 2000); no. 531/01 Naumann = CBH-0157.

A. ranakaensis: genitalia no. 868/03 Naumann (Fig. 6).

Antheraea sp. from Alor: genitalia no. 866/03 Naumann; no. CBH-0364 (Fig. 7).

A. platessa from Sabah, East Malaysia: genitalia no. 869/03 Naumann.

A. schroederi from Philippines, Negros I.: genitalia no. 870/03 Naumann (Fig. 8).

It will be interesting to search for further Saturniidae in East Timor. In parallel with Flores (c.f. Paukstadt *et al.* 1997), a second species of the genus *Antheraea* might also be expected in Timor, which would add additional knowledge about the origin and dispersal of this genus in the east.

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